REMARKS

Applicant's remarks below are preceded by quotations of the related comments of the Examiner in small, boldface type.

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Applicant does not understand the objection to the present title "Output Resistance Modulation in Power Converters." The pending claims are directed to apparatus and methods "for converting power" that include "modulation control circuitry adapted to modulate the ON-resistance of the primary switch." The specification describes (beginning at page 72, line 21) a "technique, in which the ***equivalent output resistance of a power converter is varied*** by varying the ON resistance of the primary switches in the power converter." Spec. p. 73, lines 18-19. The title is therefore believed to be descriptive of the claimed invention. However, applicant is open to consider suggestions from the examiner for improving the descriptiveness of the title.

3. Claims 1-3, 6, 7, 10-13, 16, 17, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Zaitsu et al. (US 5,805,432).

Zaitsu et al. discloses a power converting apparatus (see figures 5 and 9-24) comprising a transformer (4), a primary switch (3) driving the transformer from an input source (1), an output circuit (6 and 7) delivering an output voltage to a load from the transformer, and switch controller/modulation control circuitry (8 as illustrated in figures 7 and 8) response to the output voltage.

Applicant respectfully disagrees. Independent claims 1 and 11 recite, among other things, "modulation control circuitry adapted ***to modulate the ON-resistance*** of the primary switch." The cited references do not teach or suggest this aspect of the claims.

Zaitsu shows several embodiments of resonant DC-DC converters. Each of the embodiments uses one of two PWM control strategies: fixed-frequency PWM, or variable-frequency PWM control. Col. 6, lines 1-4, 24-25, and 48-49. The first controller, shown in Fig. 7, is a fixed frequency PWM controller that modulates the duty ratio of the switches *i.e.*, the pulse width. Col. 6, lines 1-19. The second controller, shown in Fig. 8, is a variable frequency

PWM controller that varies the converter operating frequency and also modulates the duty ratio of the switches. Col. 6, lines 22-47. These two controllers do not modulate the ON-resistance of the switches.

The controllers of Figs. 7 and 8 are used in all of the embodiments shown in Zaitsu. Col. 6, lines 48-49. No other controllers are shown or discussed. The Zaitsu PWM controllers do not modulate the ON-resistance of any of the switches. In applicant's review of the Zaitsu patent, not one mention of the ON-resistance of the switches was found, let alone, a controller to modulate the ON-resistance. Zaitsu fails to teach or suggest the claimed "modulation control circuitry adapted ***to modulate the ON-resistance*** of the primary switch."

Independent claims 1 and 11 are patentable for at least the foregoing reasons.

5. Claims 4, 5, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zaitsu et al.

Zaitsu et al teaches a power converting apparatus as recited by claims 4, 5, 14 and 15 except for having the modulation control circuitry responsive to a load current and/or the transformer leakage flux. Having modulation control circuitry responsive to a load current and/or a transformer leakage flux was an old and known expedient in the art at the time of the invention. It would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the power converting apparatus of Zaitsu et al by having the modulation control circuitry responsive to a load current and/or the transformer leakage flux in order to provide a desired control scheme that was old and known in the art at the time of the invention.

Applicant disagrees that Zaitsu teaches or suggests any aspect of sensing output current, leakage flux, or any aspect of modulating the on-resistance of switches. Dependent claims 4, 5, 14, and 15 depend from and incorporate the features of independent claims 1 and 11 discussed above and are patentable for at least the same reasons.

6. Claims 8, 9, 18, 19, and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicant thanks the examiner for indicating that the subject matter claims 8, 9, 18, 19, and 20 is patentable.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Smith (US 5,331,533) is cited to show a power converting apparatus old and known in the art at the time of the invention.

The Smith patent was not discussed because it was not applied to the claims.

All other dependent claims incorporate features of independent claims 1 and 11 discussed above and are therefore patentable for at least the same reasons. Applicant asks that all claims be allowed.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper.

Applicant requests consideration of the Information Disclosure Statement submitted with this response and return of the initialed Form PTO-1449.

Enclosed is a $1020.00 check for the Petition for a Three Month Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050, referencing Attorney Docket No. 00614-136004.

Respectfully submitted,

Date: February 8, 2005

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